

CLAIMS**We claim:**

1. In a computer system having a user mode and a kernel mode, wherein the user mode contains an application and the kernel mode contains a protocol module
5 implementing the L2CAP layer of the Bluetooth protocol, a method of providing Bluetooth communication access to the application comprising the steps of:

providing a kernel mode translation layer between the protocol module and the application, wherein the translation layer exposes a first interface to the protocol module via a first data protocol and wherein the translation layer exposes a second interface via a
10 second data protocol;

conveying an application communication from user mode to kernel mode such that the conveyed communication is compliant with the second data protocol;

in the translation layer, receiving the conveyed communication and converting the conveyed communication into a form that is compliant with the first data protocol; and
15 conveying the converted communication to the protocol module via the first data protocol.

2. The method according to claim 1, wherein the step of conveying an application communication from user mode to kernel mode further comprises the step of
20 receiving the application communication at a user mode Winsock module and conveying the communication from the Winsock module into kernel mode, the method further comprising the steps of:

receiving a connection request at the translation layer from the Winsock module to connect to a remote service; and

25 causing the translation layer to automatically send and receive communications to the protocol module sufficient to establish a Bluetooth connection, accessible via the Winsock module, to the remote service.

3. The method according to claim 2, further comprising the steps of:
30 sending a connection indication from the Winsock module to a user mode helper module, wherein the connection indication comprises an indication that connection

information usable to establish the Bluetooth connection is requested by the Winsock module;

in response to receipt of the connection indication at the helper module, providing the requested connection information from the helper module to the Winsock module;

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using the connection information in establishing the Bluetooth connection.

4. The method according to claim 3, wherein the connection information provided to the Winsock module comprises a Bluetooth address.

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5. The method according to claim 3, wherein the connection information provided to the Winsock module comprises a service class ID.

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6. The method according to claim 3, wherein the connection information provided to the Winsock module comprises a port value.

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7. The method according to claim 3, wherein the connection request specifies a service, and the connection information provided to the Winsock module comprises SDP information related to the specified service.

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8. A computer-readable medium for use in a computer system having a user mode and a kernel mode, wherein the user mode contains an application and the kernel mode contains a protocol module implementing the L2CAP layer of the Bluetooth protocol, the computer-readable medium having computer-executable instructions for performing steps comprising:

providing a kernel mode translation layer between the protocol module and the application, wherein the translation layer exposes a first interface to the protocol module via a first data protocol and wherein the translation layer exposes a second interface via a second data protocol;

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accepting an application communication from user mode to kernel mode such that the accepted communication is compliant with the second data protocol;

receiving the conveyed communication in the translation layer and converting the conveyed communication into a form that is compliant with the first data protocol; and conveying the converted communication to the protocol module via the first data protocol.

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9. The computer-readable medium according to claim 8, wherein the step of accepting an application communication from user mode to kernel mode further comprises the step of accepting the application communication at a user mode Winsock module and accepting the communication from the Winsock module into kernel mode, the computer-readable medium having further computer-executable instructions for performing steps comprising:

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sending a connection request to the translation layer from the Winsock module to connect to a remote service; and

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causing the translation layer to automatically send and receive communications to the protocol module sufficient to establish a Bluetooth connection, accessible via the Winsock module, to the remote service.

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10. The computer-readable medium according to claim 9, the computer-readable medium having further computer-executable instructions for performing steps comprising:

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providing a user mode helper module; sending a connection indication from the Winsock module to the user mode helper module, wherein the connection indication comprises an indication that connection information usable to establish the Bluetooth connection is requested by the Winsock module;

in response to receipt of the connection indication at the helper module, providing the requested connection information from the helper module to the Winsock module; and

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using the connection information for establishing the Bluetooth connection.

11. The computer-readable medium according to claim 10, wherein the connection information provided to the Winsock module comprises a Bluetooth address.

12. The computer-readable medium according to claim 10, wherein the
5 connection information provided to the Winsock module comprises a service class ID.

13. The computer-readable medium according to claim 10, wherein the connection information provided to the Winsock module comprises a port value.

10 14. The computer-readable medium according to claim 10, wherein the connection request specifies a service, and the connection information provided to the Winsock module comprises SDP information related to the specified service.

15 15. A system for radio frequency communication comprising:
a computing device associated with a Bluetooth radio frequency transmitting and receiving device;
an application residing in the user mode of the computing device;
a user mode communication module communicably linked to the application and adapted to receive an outgoing communication from the application;
20 a kernel mode communication module adapted to receive the outgoing communication from the user mode communication module and to provide the communication as a kernel mode output;
a translation layer residing in kernel mode, communicably linked to the kernel mode communication module, adapted to receive the kernel mode output from the kernel
25 mode communication module and to provide a translated outgoing communication; and
a Bluetooth L2CAP-compliant protocol module residing in kernel mode for receiving the translated outgoing communication, and for providing an output representative of the outgoing communication which is compliant with the Bluetooth L2CAP protocol, for transmission via the Bluetooth radio frequency transmitting and
30 receiving device.